

Claims

[1] An agitator which is set within a vessel having a bottom and a circumferential wall rising from the circumference of the bottom, is attachably and detachably mounted on a supporting member extending downward on an agitating device, makes rotation and/or revolution in relation to the vessel due to rotation of at least either the supporting member or the vessel to agitate a material in the vessel, said agitator comprising

at least three biased agitating blades arranged to contact a virtual sphere centered on a virtual central axis extending vertically and surround the central axis,

each of said biased agitating blades being provided with a penetrating window,

one end in the circumferential direction of the central axis of each of said biased agitating blade resting on an inner face facing the central axis of an adjoining biased agitating blade on said one side in the circumferential direction of the central axis, the other end thereof in the circumferential direction of the central axis protruding to back away from the central axis than an adjoining agitating blade on the other side in the circumferential direction of the central axis, and

the adjoining agitating blades being separably connected to each other.

[2] An agitator as claimed in claim 1, wherein in place of so

arranging at least three biased agitating blades that the blades contact a virtual sphere centered on a virtual central axis extending vertically and surround the central axis, at least three biased agitating blades contact the circumferential face of a virtual cylinder of which central axis is coincident with a virtual central axis extending vertically and surround the central axis.

[3] The agitator according to claim 1 or claim 2, wherein the agitator is provided with a connecting member, which is detachably and attachably mounted on the supporting member of the agitating device, and the biased agitating blades are separably connected to the connecting member.

[4] The agitator according to any one of claim 1 through claim 3, wherein the agitator is provided, in the lower part or on the lower side thereof, with plate-type radial agitating blades, of which end edges are substantially aligned with the central axis and which extend in radial directions of the central axis and are provided with penetrating windows, and the radial agitating blades are separably connected to the biased agitating blades.

[5] The agitator according to claim 4, wherein the spacing between the frames of each window of the biased agitating blades is greater than the spacing between the frames of each window of the radial agitating blades.

[6] The agitator according to any one of claim 1 through claim 5, wherein the agitator is provided, on at least either the biased agitating blades or the radial agitating blades, with a coil spring compressively mounted between window frames.

[7] An agitating device with agitator comprising
 an agitating device having a supporting member extending downward,
 a vessel having a bottom and a circumferential wall rising from the circumference of the bottom, said vessel being mounted on the agitating device, and
 said agitator according to any one of claim 1 through claim 6 being attachably and detachably mounted on the supporting member of the agitating device,
 wherein the agitator is made to rotate and/or revolve in relation to the vessel due to rotation of at least either the supporting member or the vessel so as to agitate a material in the vessel.

[8] An agitating device with agitator comprising
 an agitating device having a plurality of supporting members extending downward, said supporting members having their rotation axes or revolution axes kept substantially parallel,
 a vessel having a bottom and a circumferential wall rising from the circumference of the bottom, said vessel being mounted on the agitating

device, and

a plurality of agitators according to any one of claim 1 through claim 6 being attachably and detachably mounted respectively on the supporting members of the agitating device,

wherein the agitators are made to rotate and/or revolve in relation to the vessel due to rotation of at least either the supporting members or the vessel so as to agitate a material in the vessel.